

**College of San Mateo  
Official Course Outline**

**1. COURSE ID:** MUS. 289    **TITLE:** Recording for Musical Applications

**Units:** 3.0 units    **Hours/Semester:** 32.0-36.0 Lecture hours; 48.0-54.0 Lab hours; 64.0-72.0 Homework hours; 144.0-162.0 Total Student Learning hours

**Method of Grading:** Grade Option (Letter Grade or Pass/No Pass)

**Prerequisite:** MUS. 290, or DGME 118

**2. COURSE DESIGNATION:**

**Degree Credit**

**Transfer credit:** CSU; UC

**3. COURSE DESCRIPTIONS:**

**Catalog Description:**

In this course students gain hands-on experience recording a variety of musical instruments, vocalists, and ensembles in a professional recording studio. With a focus on project management and musical aesthetics across genres, it covers concepts including applied acoustics, signal flow, microphone placement and techniques, signal processing, multi-track recording procedures, mixing, client interaction, and session management. This course builds on the fundamentals of audio recording and studio techniques introduced in DGME 118 or MUS 290.

**4. STUDENT LEARNING OUTCOME(S) (SLO'S):**

Upon successful completion of this course, a student will meet the following outcomes:

1. Determine proper microphone selection and placement for a given musical instrument or voice through applied knowledge of room acoustics, audio principles, and instrument sound production.
2. Demonstrate proper signal flow and connections between recording components such as microphones, mixing consoles, monitor systems, recording devices and signal processors.
3. Plan and execute all stages of a multi-track recording session: from initial communication with recording artists through the recording process and audio post-production.

**5. SPECIFIC INSTRUCTIONAL OBJECTIVES:**

Upon successful completion of this course, a student will be able to:

1. Determine proper microphone selection and placement for a given musical instrument or voice through applied knowledge of room acoustics, audio principles, and instrument sound production.
2. Demonstrate proper signal flow and connections between recording components such as microphones, mixing consoles, monitor systems, recording devices and signal processors.
3. Plan and execute all stages of a multi-track recording session: from initial communication with recording artists through the recording process and audio post-production.

**6. COURSE CONTENT:**

**Lecture Content:**

1. Jobs and Roles found in the Recording Studio
  - A. Recording engineer
  - B. Mixing engineer
  - C. Mastering engineer
  - D. Recording studio manager
  - E. Music producer
2. Project Management
  - A. Project planning
  - B. Client interaction
  - C. Metadata and credits
  - D. Deliverables and timelines
  - E. Session time management
3. Applied Acoustics in Music Recording Studios
  - A. Phase relationships when using multiple microphone
  - B. Timbre, harmonics, and partials of musical instruments and voices
  - C. Natural and artificial reverberation
  - D. The effect of room acoustics on recording

- E. Sound measurements (Hertz, Decibels, meter types)
  - F. Inverse distance and inverse square laws
- 4. Human Hearing System
  - A. Basic anatomy of the ear
  - B. Equal loudness curves
  - C. Localization
  - D. Psychoacoustics
- 5. Proper Connections, Usage, Storage, and Maintenance of Recording Studio Components
  - A. Signal Flow
  - B. Mixing console
    - a. Analog vs. digital mixers
    - b. Inline vs. split line consoles
    - c. Channel strip
    - d. Input and output busses
    - e. Auxiliary sends and returns
    - f. Inserts
  - C. Patch Bay
    - a. Normalled vs. Isolated
  - D. Monitoring: Speakers and Headphone Systems
  - E. Outboard Gear
    - a. Microphone preamplifiers
    - b. Dynamic effects
    - c. Equalizers and other signal processors
  - F. Microphones
    - a. Dynamic, condenser, and ribbon
    - b. Phantom power
    - c. Polar patterns
    - d. Frequency response
    - e. Windscreens and pop filters
    - f. Proximity effect
  - G. Musical Instruments
    - a. Synthesizers and drum machines
    - b. Acoustic musical instruments and voice
  - H. Digital Audio Workstation (DAW)
    - a. Comparison of different DAWs
  - I. D.I. boxes
  - J. Cables and Connectors
    - a. Balanced vs. unbalanced connections
    - b. Analog vs. digital connections
    - c. Signal levels
    - d. Impedance
    - e. Cable wrapping, storage, and management
- 6. Microphone Selection and Placement for a variety of musical instruments and voices in an ensemble setting
  - A. Voice
  - B. Acoustic musical instruments
  - C. Stereo mic techniques
  - D. Gain staging
  - E. Headroom
  - F. Signal-to-noise ratio
  - G. Clipping
- 7. Multi-track Recording in a DAW
  - A. Setting up a multi-track session project in a DAW
  - B. Track types (audio, MIDI, auxiliary, master)
  - C. Overdubbing and comping

#### **Lab Content:**

1. Compare the sound production of different live solo and ensemble acoustic sound sources in terms of pitch range, intensity, timbre, articulation, and spatial arrangement.
2. Utilize the patch bay to make proper audio connections in the studio.
3. Select microphones for a studio recording session based on practical and stylistic considerations.
4. Implement microphone placement techniques to optimize sound quality and musical expression.

5. Perform a sound check to set proper microphone preamplifier gain levels.
6. Create a monitor or headphone mix using auxiliary sends on a mixing console.
7. Implement and operate a talkback system between the control room and a booth or live room.
8. Create a click track for a recording artist or ensemble.
9. Record acoustic and electronic musical instruments and other sound sources in a digital audio workstation (DAW).
10. Record overdubs in a DAW.
11. Edit audio multi-tracks in a DAW.
12. Apply mixing, EQ, and signal processing decisions in a DAW according to industry best practices to best represent the creative vision of the artist.
13. Export audio recordings at a variety of digital audio resolution settings.
14. Properly handle and store studio equipment, including correct cable wrapping.
15. Set and manage client expectations during a recording session.

## 7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

- A. Lecture
- B. Lab
- C. Activity
- D. Observation and Demonstration

## 8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

### **Writing Assignments:**

Short reports describing the strategies and techniques implemented in recording activities and projects.

### **Reading Assignments:**

Weekly readings from assigned texts including the textbook, equipment and software manuals, equipment and software reviews, and articles on audio engineering principles.

### **Other Outside Assignments:**

Lab Assignments: Ear Training, Cable Wrapping and Management, Setting Microphone Levels, Microphone Techniques and Placement, Mixer Techniques, Recording in a Digital Audio Workstation, Application of EQ and other Signal Processing.

Projects: Plan and implement a multi-track recording session for a soloist, band or ensemble. Edit, mix, and export recorded audio tracks.

## 9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Class Participation
- B. Class Work
- C. Exams/Tests
- D. Group Projects
- E. Homework
- F. Lab Activities
- G. Projects
- H. Quizzes

## 10. REPRESENTATIVE TEXT(S):

Possible textbooks include:

- A. Huber, D. Miles, R. E. Runstein. *Modern Recording Techniques*, 9th ed. New York: Routledge, 2017
- B. Owinski, B.. *The Recording Engineer's Handbook*, 4th ed. Bobby Owinski Media Group, 2017
- C. Corbett, I.. *Mic It! Microphones, Microphone Techniques, and Their Impact on the Final Mix*, 2nd ed. New York: Routledge, 2020

**Origination Date:** October 2021

**Curriculum Committee Approval Date:** December 2021

**Effective Term:** Fall 2022

**Course Originator:** Adria Otte